

## PATENT

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.: 10/005,429 Confirmation No.:  
8554  
Filed: December 3, 2001  
Art Unit: 1638  
Examiner: Stuart F. Baum  
Title: COMPOSITIONS AND METHODS FOR ALTERING THE  
DISULFIDE STATUS OF PROTEINS

Docket No.: 5718-119 (035718/241421)  
Customer No.: 00826

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

## COMMUNICATION

Sir:

Responsive to the telephonic interview between Examiner Baum and Applicants' undersigned representative on April 6, 2005, Applicants submit concurrently herewith multiple amino acid sequence alignments of the *Zea mays* amino acid sequences for the NADPH-thioredoxin reductase (SEQ ID NO: 25) and the thioredoxin *h* (SEQ ID NO: 14) of the present invention with the respective thioredoxin reductase and thioredoxin amino acid sequences that are disclosed in WO 00/36126.

If in the opinion of the Examiner a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R.

RTA01/2179615v1

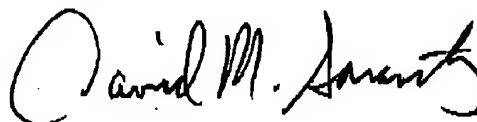
Appl. No.: 10/005,429

April 11, 2005

Page 2

§ 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,



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## CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that this paper is being facsimile transmitted to the U.S. Patent and Trademark Office Fax No. (571) 273-0792 on the date shown below.

  
Karyn Ginn

April 11, 2005

Date

## ZM TRx vs Lanahan

		Section 1											
		(1)	1	10	20	30	40	50	60	70	80		
ZM TRX-h		(1)	1	10	20	30	40	50	60	70	80 <td colspan="2"></td>		
Methanococcus Jananishi TRX		(1)	1	10	20	30	40	50	60	70	80		
Archaeoglobus fulgidus TRX1		(1)	1	10	20	30	40	50	60	70	80		
Archaeoglobus fulgidus TRX3		(1)	1	10	20	30	40	50	60	70	80		
Archaeoglobus fulgidus TRX2		(1)	1	10	20	30	40	50	60	70	80		
Archaeoglobus fulgidus TRX4		(1)	1	10	20	30	40	50	60	70	80		
Consensus		(1)	1	10	20	30	40	50	60	70	80		
Section 2													
ZM TRX-h		(56)	56	80	90	100	110	120	130				
Methanococcus Jananishi TRX		(47)	47	80	90	100	110	120	130				
Archaeoglobus fulgidus TRX1		(21)	21	80	90	100	110	120	130				
Archaeoglobus fulgidus TRX3		(56)	56	80	90	100	110	120	130				
Archaeoglobus fulgidus TRX2		(15)	15	80	90	100	110	120	130				
Archaeoglobus fulgidus TRX4		(35)	35	80	90	100	110	120	130				
Consensus		(88)	88	80	90	100	110	120	130				
Section 3													
ZM TRX-h		(131)	131	145									
Methanococcus Jananishi TRX		(110)	110	145									
Archaeoglobus fulgidus TRX1		(82)	82	145									
Archaeoglobus fulgidus TRX3		(131)	131	145									
Archaeoglobus fulgidus TRX2		(80)	80	145									
Archaeoglobus fulgidus TRX4		(100)	100	145									
Consensus		(131)	131	145									

## ZM NTR vs lanahan

	1	10	20	30	40	50	64
ZM-NTR	(1)	MEGSAAPL	TRICII	GGPAAHTAAI	YAARAE	KPVL	PEGWMANDIAAGGQLTTTDDVENFP
Archaeoglobus fulgidus NTR	(1)	-----	NYDVAI	IGGPGAGL	TAAI	YSARYGLK	TFE-----TVDPVSQSLAAKIENYPG
Methanococcus jannaschii (NTR)	(1)	-----	MIHDTII	IGAGPGGL	TAGI	YANRGLN	ALCIE-----KENAGGRIAEAGIVENYPG
Consensus	(1)	LIHDI	IIIGAGPAGL	TAAIYAARA	LK V FE	I AGGQLS	AA VENYPG
	(65)	65	70	80	90	100	110
ZM-NTR	(65)	FENGIMGAD	LMDNCRAQ	SLRFGT	NILSET	VTAVDF	SACFFRV
Archaeoglobus fulgidus NTR	(51)	FEGS--	GNELLEK	MEQAVK	AGAEWK	LEKVER	VERNGETFT
Methanococcus jannaschii (NTR)	(52)	FEER-	GYELA	EKFKNHAE	KFLPII	YDEVIK	ETKERPFK
Consensus	(55)	FE	G ELLEK	K QALKEG	II E V KVE	A PFKVIAD	SEYLAKEIIVATGAK KK
	(129)	129	140	150	160	170	180
ZM-NTR	(129)	LHPPGSDAY	WNRGISAC	AVCDGAAP	IFRNKPI	AVIGG	SDSAMESNFLT
Archaeoglobus fulgidus NTR	(113)	AGIEGES	AFIGRGV	SYCATCD--	GNFFRG	KKVI	YVYSGKEAIEDAI
Methanococcus jannaschii (NTR)	(115)	LGLN-	EDKFIG	RGISYCTMCD--	AFYLNK	EVIVIG	RDTPAIMSAINL
Consensus	(129)	IGT	GEDAFIG	RGISYCAMCD	A FERNK	VIVIG G	AIEDAIFL DIG V IISRK SF
	(193)	193	200	210	220	230	240
ZM-NTR	(193)	RASKINQARA	LENPK-I	KVLWDSE	VEAYGG	ANGG	PLAGVKVKNLL
Archaeoglobus fulgidus NTR	(175)	RAEKALVEE	VEKRG--	IPVHYST	TIRKII	IGSGK--	VERVVA
Methanococcus jannaschii (NTR)	(176)	KAAESIM	LDKLEANN	VEIITYN	AKPLEI	VIGGER--	AEVKSIVNGKEE--
Consensus	(193)	RAAKAIN	D LK A	I VIY S	ILEIIG	AK LEGVKI	N K E DI ADGIFIAIGH
	(257)	257	270	280	290	300	310
ZM-NTR	(257)	EPA TKFLGG	-OLELDS	DGYVET	KPGSTHT	SVKGVFAA	GDVQDKK
Archaeoglobus fulgidus NTR	(234)	RPATDVVA	EALGV	ERDSNGYI	IKVDK-E	QRTNVE	GVFAAGDCCD
Methanococcus jannaschii (NTR)	(235)	VPNTEFL	KD	SGIELDKK	GFIKTDE	-NCR	TNIDGIYAVGDV
Consensus	(257)	PATDFELAD	GIELDS	GYIKTD	RTNVDG	GVFAAGDV	D LKQVITA GDECVAA A K

ZM NTR vs lanahan

## Section 6

(321) 321 333  
ZM-NTR (319) YLQEI GAQEGKSD  
Archaeoglobus fulgidus NTR (297) YLTS-----  
Methanococcus jannaschii (NTR) (297) YLQKL-----  
Consensus (321) YLQ I

Page 2